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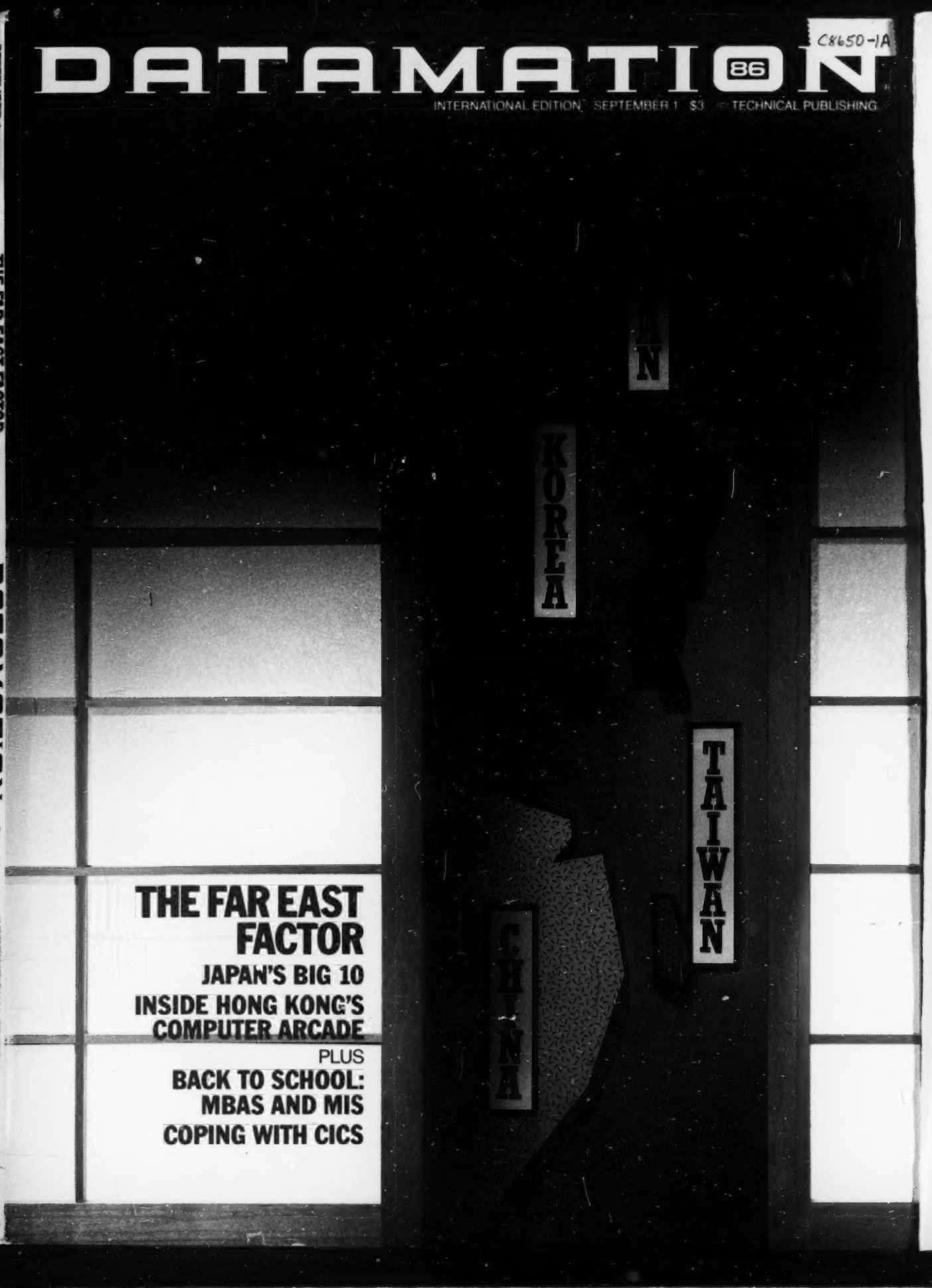

THE FAR EAST FACTOR

JAPAN'S BIG 10

INSIDE HONG KONG'S COMPUTER ARCADE

PLUS

BACK TO SCHOOL: MBAS AND MIS

COPING WITH CICS

DATAMATION

SEPTEMBER 1, 1986/$3 U.S.A.
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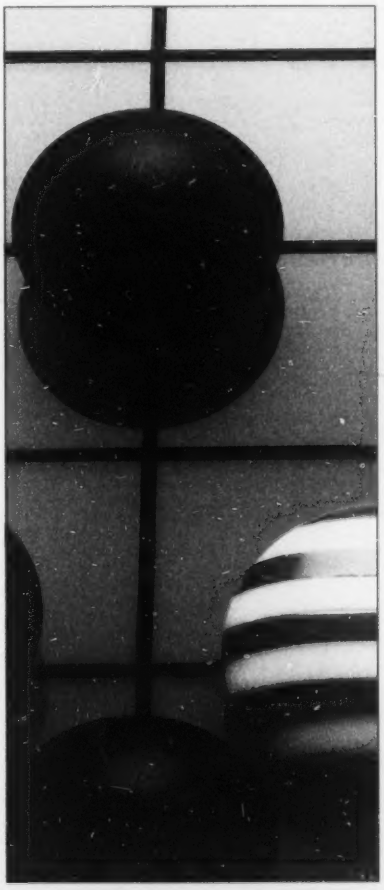

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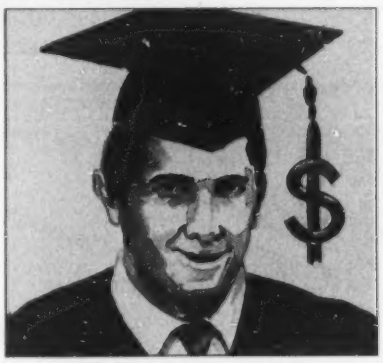

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COVER PHOTOGRAPH BY WALTER WICK; ILLUSTRATION BY JAVIER ROMERO

LETTERS

THE LAST TIMES

Confirming points made by Frank Yang in "IBM's Big Retail Sale" (July 15, p. 46), shortly after the AT was announced, I went to the local IBM Product Center. They indicated not only that there was a backlog but that they could not even give me an anticipated delivery date. Directly across the street was an Entré computer store. They not only had an AT in stock, they delivered it, set it up, and got us running in less than three days.

A second instance of the total lack of responsiveness of the Product Center relates to ordering an electronic typewriter. Two different departments ordered IBM electronic typewriters, one from the Product Center and one from the local office supply dealer. At the Product Center, the typewriter was in a box and given to us, with all setup expected to be performed by the customer! About two weeks later, we wanted a second typewriter, ordered it from a local dealer, and, lo and behold, the dealer delivered it personally, set it up, and instructed the operator in its use.

Needless to say, those were the last times we went to an IBM Product Center.

ALFRED M. KING
Managing Director
Professional Services
National Association of Accountants
Montvale, New Jersey

MY KIND OF TOWN

"NCC at the Crossroads" (June 15, p. 169) contains the text: "What the hell were these people doing most of the time they were in Chicago?" The apparent concern of that paragraph could be expressed with: "What ever were these people doing with their time in Chicago?" This would better agree with the author's restraint of expression in the sidebar "NCC's Roots": " 'You are in deep ----,' [sic] said one IAP member bluntly . . . ."

You may want to remember that the intensive form of interrogative pronouns and adverbs is obtained by adding—and not combining—the adverb "ever." "What the hell" serves better as an interjection, e.g.: "What the hell! We'll do it anyway!"

I take it for granted that your author and former editor did not mean "What *in* Hell" which would use "Hell" as a metaphor for Chicago and might suggest the conventioners were having a hellishly good time.

DAVID AMES
Weymouth, Massachusetts

SAY WHAT?

In "Outfitting the Computer Room" (July 15, p. 58), Eric Marcus says, "Some still think the best place to locate the tape storage room is next to the tape drives. But if you send tapes off-site and the storage room is on the far side of the data center, you have to walk through the operations every time you need to send off a tape."

Say what? Let's reverse it. Everytime you mount a tape you have to walk through operations to satisfy the tape mount? I sure hope this was a misprint, because a midsized data center satisfies over 2,000 mounts a day.

I am a media management consultant who strongly recommends combining the physical tape or cartridge storage area (library) with the physical drives. The benefits:

- no loss of productivity caused by extra footsteps;
- same temperature/humidity/cleanliness with no deviation;
- same trained personnel handling the media;
- no searches for missing tapes—they are in the slot, on the drive, or in the I/O rack;
- and last, if properly managed, the recognition that *tape media are everyone's job and responsibility.*

Secondly, I am glad you indentified the need for off-site storage to back up your media. Disaster recovery plans are great, but if you don't have the data what the heck do you process? I assume you are referring to a temporary emergency vault on-site, but for your permanent off-site storage, the rule of thumb is 35 miles or a half-hour drive from the main facility. A "common" disaster, such as a fire in a multistory office building or air pollution as a result of a toxic fire would prohibit access to facilities located in the same building or immediate area.

Thirdly, I do agree that space and the work flow must be studied. Too much space means extra footsteps. Also, crts must be centralized for operator messages.

PAT RIZZIELLO
President
TLC Tape Library Consulting
Yardville, New Jersey

OVER HERE

It seems that Bert Cornelius ("Over There," Letters, July 15, p. 19) needs a lesson in world economics before he rears his part of "the next generation of Americans." Economic interdependencies are far more extensive than he, I, and probable anyone really understands. Restricting ourselves to buying American products that are not competitive in the world marketplace hurts everyone in the long run for the short-term benefit of a few.

If we were to pay more for an American-made car to subsidize a relatively inefficient manufacturer, we may not have enough of our spendable income remaining to buy a cost-competitive American-made lawn mower and other things we need. Therefore, an efficient lawn mower manufacturer might go out of business to keep a noncompetitive automobile manufacturer in business. Survival of the fittest must be allowed to apply to American business or we may indeed have to learn Japanese. The only alternative is to export our labor unions and lawyers to render our competition as inefficient as ourselves.

BILL HOLMES
Libertarian
Poway, California

ADDENDUM

AGS Computers Inc., Mountainside, N.J., should have ranked in this year's DATAMATION 100. The company reports that its total 1985 revenues, all derived from dp, were $279.2 million. We regret the omission.

DATAMATION scores the game that tracks the winners and their moves in the world's second-largest dp market.

GOING FOR JAPAN

by Thomas Murtha and Linda Runyan

Making the right moves got tougher for the top players in the Japanese data processing arena last year. By coordinating their common interests, many Japanese computer companies tried to encircle competitor IBM—a typical move found in the traditional Japanese game of Go. Other firms, following the rules of cooperation, chose to join hands with Big Blue in hopes of spurring sales in certain dp sectors.

In an era of declining growth, a strategic alliance with either friend or foe can pay off. Last year the revenue payoffs accrued to the home team, as Japanese companies increased their presence in DATAMATION's ranking of the 10 leading dp companies in Japan by two. Approximately 84% of the combined revenues of these top 10 firms was chipped in by Japanese suppliers. That combined revenue total was up 14.5% to $16.4 billion in 1985. The combined revenue of 1984's top 10 showed an increase of 20% over the previous year's total.

Revenues from exports and foreign subsidiaries added another $4.1 billion to the corporate coffers of the top 10 companies. The overseas dp revenues of these firms grew 22.4% to $1.2 billion last year. Most of those revenues are derived from foreign subsidiary operations. In fact, figures from Japan's Ministry of Finance show that the country's computer exports increased a scant 1.6% to $4.6 billion, while imports shot up a substantial 31% to $1.2 billion in 1985.

The British securities firm James Capel & Co. in Tokyo estimates that the major Japanese electronics companies had moved an average of 17% of their export production offshore by the end of last year. This trend is barely visible in our own survey, which shows that roughly 20% ($4.14 billion) of the combined top 10 revenue total came from overseas production and exports—a slight increase over 1984.

Stepping up offshore activities, however, was no guarantee of profitability. The increasing strength of the yen combined with competition from the Four Dragons—Hong Kong, Singapore, Taiwan, and Korea—eroded margins for Japanese manufacturers in dp peripherals and components. This double whammy hit Fujitsu, Hitachi, and NEC hardest where it hurt the most—in their net incomes.

The yen's rapid appreciation against western currencies in late 1985 provided a strong incentive to companies seeking to increase their offshore investments. While the official OECD average exchange rates used by DATAMATION indicate a relatively constant yen-to-dollar ratio between 1984 and 1985, in reality, by the end of 1985, the dollar had lost more than 20% against the yen.

The rising yen, however, did not affect Japan's domestic dp production levels last year. Production statistics from Japan's Ministry of International Trade & Industry (MITI) reveal an 18.9% increase in the domestic output of computers and peripherals. Favorable economic conditions at home contributed to healthy, although more sluggish, growth for Japan's domestic dp industry.

THE MAJOR MOVERS ON TOP 10

The major movers in the Japanese dp market all made it onto the top 10 table. The combined revenue total of these companies accounted for a whopping 83% of the Japanese dp market, which is valued at around $19.8 billion. Most of that market went to the top four firms—Fujitsu, NEC, IBM Japan, and Hitachi—each of which stays snugly in the same position it held in 1984.

Below the fab four, there was quite a lot of repositioning, all to a lower rung. The shortest drop was taken by Toshiba, which inched down one notch to number six. The next three firms to lose ground were Mitsubishi Electric, down from number six to eight, Oki Electric, down from seven to nine, and Nippon Univac Kaisha (NUK), down from eight to 10.

The company in the cellar, NUK, pulled in $552 million in Japanese dp revenue, more than twice as much as 1984's number 10, Burroughs. In 1985, the BUNCH companies seemed to lose their punch in Japan. Both Burroughs and NCR dropped off of the 1985 top 10 table. Rushing in to fill the gap were Matsushita Electric Industrial Co. Ltd. and Nippon Telegraph & Telephone Corp. (NTT).

In making its debut in the Japan 10, Matsushita, Japan's second largest manufacturing conglomerate, won the fifth slot with consolidated dp revenues of $1.15 billion, up almost 30%. Robust oem sales of peripherals and microcomputers helped Matsushita enter the exalted ranks of the top 10. Japan's largest producer of industrial robots decided to spread its dp wings in 1985. In October, Matsushita began marketing digital PBXs in Japan. By the end of the year, the company's joint minicomputer venture with Fujitsu was paying off handsomely. The machine, produced by Matsushita and sold under the Panafacom label, had captured 7.5% of the domestic mini market.

Two notches below Matsushita is newcomer NTT. Under the terms of Japan's Telecommunications Enterprise Law, NTT became a private concern in April 1985. The former PTT's dp revenues of $762 million earned it the number seven position on the Japan 10 table.

The liberalization of Japanese telecom in 1985 spurred growth in dp services, up an estimated 21% to $7 billion. Local corporations looking for outside help in building data communications networks accounted for some of that growth. One of the major competitive drives in the local datacom market is toward providing value-added network (van) services. Nobody knows just how big this market—worth roughly $600 million in 1985—will become, but everybody knows that they want a piece of the van pie.

Both NEC and Fujitsu chalked up big gains due to rapid growth in the software and services sector. Front-runner Fujitsu, which once again outsold all its rivals in the Japanese market, earned $3.5 billion in dp revenues to easily reach the number

PHOTOGRAPH BY TOGASHI

When rivals thought they had IBM surrounded, Big Blue put them on the defensive.

DATAMATION'S JAPAN 10

1985 RANK	1984 RANK	COMPANY	OWNER-SHIP	1985 JAPAN DP REV ($ MIL)	% CHG. ($ U.S.)	% CHG. (YEN)	1985 TOTAL DP REV ($ MIL)	% CHG. ($ U.S.)
1	1	Fujitsu Ltd.	Japan	3,528.6	12.4	12.9	4,303.5	11.9
2	2	NEC Corp.	Japan	2,965.3	4.3	4.8	3,753.5	13.5
3	3	IBM Japan Ltd.	U.S.	2,677.5	20.2	20.7	48,554.0*	9.6
4	4	Hitachi Ltd.	Japan	2,346.8	11.5	12.0	2,879.1	12.1
5	—	Matsushita Electric Industry Co. Ltd.	Japan	1,154.0	29.3	29.9	1,444.1	29.4
6	5	Toshiba Corp.	Japan	1,105.6	27.3	27.9	1,382.0	27.3
7	—	Nippon Telegraph & Telephone Corp.	Japan	762.3	20.2	20.8	762.3	20.2
8	6	Mitsubishi Electric Corp.	Japan	719.1	8.9	9.4	887.8	7.5
9	7	Oki Electric Industry Co. Ltd.	Japan	621.9	5.1	5.5	888.4	3.6
10	8	Nippon Univac Kaisha Ltd.	Japan/U.S.	552.2	11.2	11.7	552.2	11.2

*Includes parent company revenues

one spot. The PCM king had 12.9% growth in the domestic dp market. Overseas sales grew at a slightly slower rate of 12.4%.

One notch below Fujitsu in second place is NEC, which once again cashed in on strong sales in mainframes, telecom gear, and small business computers. These products helped NEC push its total dp revenue up 13.5% to almost $3.8 billion. Most of NEC's growth, however, was offshore. The computer and communications conglomerate racked up domestic dp sales of almost $3 billion, up only 4.3% (4.8% in yen).

STRONG GAINS FOR NEC

On the mainframe front, NEC scored strong gains in export markets through its oem arrangements with Honeywell in North America and Groupe Bull in France. Growth in overseas sales of telecom equipment and mainframes caused NEC's exports to surge 71% last year. The company, which was the first Japanese vendor to respond to IBM's 3090 announcement, rolled out the ACOS 1500 mainframe series in February 1985.

NEC's joint van venture with GE's Information Services Corp., C&C International, extended the global reach of both companies. At home, NEC struggled to maintain its local leadership position in the 16-bit microcomputer market. Embroiled in the micro melee were IBM and Fujitsu, both of which sought to nick NEC by coming out with new models and price reductions.

These micro moves proved successful. NEC's share of the local 16-bit market had fallen from 40% in 1984 to 32% by the end of 1985. Shaving that share was IBM, which scored many a sale with its successful 55XX series of workstations. IBM Japan actually shipped around 80,000 of its 5540 and 5550 workstations last year. Fujitsu also had good fortune in peddling its Facom micros, which cut into NEC's 16-bit machine market. By the end of the year IBM had won 23% of the lucrative business workstation market, while Fujitsu held 18%.

Right below NEC in third place is IBM, whose Japanese dp revenue represented roughly 16% of the combined top 10 total. IBM turned in the most impressive performance of any of the leading companies. After being badly bruised in the Japanese market in 1984, IBM marshaled its many strengths to recapture lost ground and put archrival Fujitsu back on the defensive. The company's $2.7 billion in Japanese dp revenue came on a gain of 20.7%, up from 1984's 17% rate.

Sierra shipments were the major factor in IBM's counterattack against Fujitsu during the last half of the year. In the first half of 1985, IBM had roughly a 23.2% share of the installed high-end mainframe market in Japan. Fujitsu, on the other hand, held an estimated 28.9% share in that same market—a share that was worth approximately $4.2 billion. By the end of 1985, IBM had overtaken Fujitsu, garnering an estimated 30% share.

So when IBM's Japanese competitors thought they had the company surrounded, Big Blue actually went on the offensive, putting Japan's dp dynamos on the defensive. First on that firing line was Fujitsu. The firm's delay in announcing a Sierra response certainly contributed to the resulting loss of market share. The October 1985 revelation that the two companies had gone into arbitration over allegations that Fujitsu had infringed on IBM software copyrights worsened the pcm's predicament.

Big Blue scored an even bigger coup last year when it signed a pact for 700 dp technology patents with Japan's Agency of Industrial Science & Technology. The U.S. company already has cross-licensing deals with Japan's Big Six dp makers. In one fell swoop last December, IBM had obtained access to almost all of the significant dp patents in Japan.

Living comfortably in Big Blue's shadow is fourth-place Hitachi. The hardware heavy, which posted a 12% hike in Japanese dp revenue, continued to plow the pcm path last year. That path was easier for Hitachi in 1985 than it was for fellow pcm Fujitsu. By March 1985 Hitachi had already announced its Sierra response—the M-680H mainframe. By the end of the year, the company had increased its share of the domestic mainframe market from 14% to 15.4%.

Hitachi was also up to speed on the plug-compatible peripheral front, bringing out double-density 3380 compatible 5-gigabyte disk drives right on schedule. Hitachi's PCM wizardry caught Sperry's eye. Last December the duo agreed to investigate the possibilities of collaborating on mainframe and storage-device technology.

Although Hitachi achieved healthy growth of 12% in domestic dp revenue, that gain was not enough to propel it into the league of fastest growers in Japan (Fig. 1). Heading that list is Matsushita Electric with 29.9%. In fifth place is IBM Japan with 20.7%. Companies that did not make the top 10 but nevertheless made gains were Nihon Digital Equipment Corp. with 31.1% Nomura Computer Systems Co. Ltd. with 24.9%, Intec Corp. with 24.1%, Ricoh Co. Ltd. with 19.8%, C. Itoh and Co. with 16.4%, and Computer Services Corp., also with 16.4%.

The growth of Nomura Computer, Intec, and Computer Services is a reflection of the continuing expansion of Japan's

1985 TOTAL REV ($ MIL)	JAPAN DP REV AS % OF TOTAL DP REV	DP REV AS % OF TOTAL REV	NET INCOME ($ MIL)	1985 JAPAN EMPL	1985 TOTAL EMPL	FISCAL YEAR-END
6,550.2	82.0	65.7	234.7	70,000	74,187	Mar
9,704.8	79.0	38.7	155.8	62,712	78,389	Mar
50,056.0*	5.5	97.0	6,555.0*	16,775	405,535	Dec
20,995.7	81.5	13.7	628.6	135,000	165,000	Mar
21,174.7	80.0	6.8	1,032.6	120,412	133,963	Nov
14,101.9	80.0	7.8	270.7	110,000	114,000	Mar
20,606.0	100.0	3.7	1,372.9	314,200	314,500	Mar
8,762.0	82.2	10.1	143.7	61,870	68,745	Mar
1,676.3	70.0	53.0	19.0	17,500	18,134	Mar
552.2	100.0	100.0	21.4	4,254	4,254	Mar

FIG. 1
FASTEST GROWERS IN JAPAN

JAPAN 10 RANK	COMPANY	% CHG. (YEN)	JAPAN DP REV ($ MIL)
5	**Matsushita Electric Industry Co. Ltd.**	29.9	1,154.0
6	**Toshiba Corp.**	27.9	1,105.6
7	**Nippon Telegraph & Telephone Corp.**	20.8	762.3
3	**IBM Japan Ltd.**	20.7	2,677.5

FIG. 2
LEADING JAPANESE DP COMPANIES

		WORLDWIDE DP REV ($ MIL)	% CHG. ($ U.S.)	% CHG. (YEN)
1	**Fujitsu**	4,303.5	11.9	12.4
2	**NEC**	3,753.5	13.5	14.1
3	**Hitachi**	2,878.1	12.1	12.6
4	**Matsushita Electric**	1,444.1	29.4	30.0
5	**Toshiba**	1,382.0	27.3	27.9
6	**Oki Electric**	888.4	3.6	4.0
7	**Mitsubishi Electric**	887.8	7.5	8.0
8	**NTT**	762.3	20.2	20.3
9	**C. Itoh**	729.2	18.4	18.9
10	**Nippon Univac**	552.2	11.2	11.7

software/services sector. Ricoh, which pulled in Japanese dp revenue of $430.2 million, is trying to get a foothold in the office automation field. To get that foothold, Ricoh linked up with AT&T, which is selling the Japanese company's facsimile machines. Meanwhile, Ricoh is peddling AT&T's 3B mini and key telephones in Japan.

Making its debut in the list of leading Japanese dp companies that are ranked by worldwide dp revenues is C. Itoh & Co. Ltd. (Fig. 2). The giant trading conglomerate's Japanese revenue grew 16.4% to $202 million. C. Itoh, ranked ninth on this table, garnered $706.7 million in worldwide dp sales, putting it easily above NUK, which holds last place on this leadership list.

NUK, also in last place on the main table, nevertheless did quite well in the Japanese market last year, scoring sales of $552 million. Ironically, Sperry's Japanese sales agent ran circles around Burroughs in Japan. To get that jump on its competitors, NUK did what so many other companies in Japan did last year—it joined forces with other firms. Alliances are not new to NUK, which has had a long affiliation with the Mitsui group. Mitsui & Co. and Sperry each control 34.2% of the company, with the remaining shares held by various Japanese banks.

Prosperous partners helped Mitsubishi Electric secure positions in both the top 10 and leaders lists. In addition to oem agreements with NUK and Sperry for micros and minis, Mitsubishi Electric also signed a deal to collaborate with Rolm on digital PBXs. Toshiba, also a qualifier on both charts, forged a network of strategic linkups last year that helped boost its Japanese dp revenue to $1.1 billion. Also a member of the Mitsui companies, Toshiba was a natural to supply Nippon Univac with telecom terminal gear. Toshiba also reached out to AT&T for digital PBXs and to ITT for packet-switching equipment. The company also bought out ailing micro maker Sord Computer and took a 20% stake in Olivetti Japan.

MAJOR TELECOM TEAM-UPS

Some of the major team-ups in Japan last year came on the telecom side. NTT's collaboration with IBM, announced at the end of the year, sent shock waves through the Japanese supplier community. Fujitsu and other members of NTT's vendor clique asked the Japanese Fair Trade Commission to carefully monitor the joint venture to prevent it from dominating the industry.

In an effort to put out the fire, NTT reassured Japanese firms that the main purpose of the joint venture was to develop Open Systems Interconnection (OSI) interfaces between its own Data Communications Network Architecture (DCNA) and IBM's Systems Network Architecture (SNA). That statement alone, however, was enough to cause grave concern among Japanese computer makers. The ability to interconnect to non-SNA networks in the banking, securities, and insurance industries, where NTT is strong, would greatly enhance IBM's strategic position in the Japanese market.

The furor over the decision by NTT and IBM to join forces quieted down in 1986. Nevertheless, IBM still has not been invited to join the Systems Protocol and Applications Group (SPAG) Japan, the local OSI support group. Being snubbed was easy for IBM to accept, given the fact that its

TAKEO MIURA of Hitachi thinks software is crucial to any move beyond the Blue.

TAKUMA YAMAMOTO of Fujitsu is a big believer in international cooperation.

GEORGE CONRADES, IBM Asia/Pacific, feels pcmers missed the software boat.

PLOWING THE PCM PATH

Japanese plug-compatible vendors Fujitsu and Hitachi have made a pretty good living plowing the pcm path in IBM's shadow. Weathering legal, technological, and marketplace storms, this compatible couple has made persistence pay off. But those payoffs may not be as handsome as in they were in years past. One reason is Big Blue's moves to copyrighted microcode—a strategy that's certain to stymie the pcm business. Anxious to bolster that business, the two pcm powers seem to be toeing the compatibility line while at the same time exploring the possibilities of taking new directions along the plug-compatible path.

To get a feel for the changes in the compatible cultures inside these two companies, DATAMATION interviewed Takuma Yamamoto, president of Fujitsu, and Takeo Miura, executive managing director of Hitachi's computer, telecommunications, and office systems group. Both executives were reluctant to give specific details on their pcm strategies. This reticence in talking to the press permeates the Japanese corporate world.

Asked about his company's pcm plans, Fujitsu boss Yamamoto offered this cryptic comment: "Fujitsu will not easily move away from IBM compatibility." Hitachi's Miura was more forthcoming. "We started out as an IBM mainframe producer because that was the de facto standard," he explains. "Our primary concern and responsibility is maintaining compatibility at the user level. This enables the user to continue using accumulated software assets. In this respect, our compatible strategy has not and cannot change, at least in the short term. However, when it comes to smaller computers, workstations, and artificial intelligence, we believe that there is no established IBM culture. This leaves room for us to develop our independent software strategies in these areas."

This software, which could benefit Hitachi in the international arena, will take time to develop and adapt to foreign markets. "In order to become more familiar with non-Japanese cultures, we will need an enormous manpower effort. So at the moment, this is not a major component of our overseas marketing strategy. Within 10 years, however, Hitachi will try to sell large, integrated systems incorporating our own software."

Fujitsu's Yamamoto also sees software as crucial to any move beyond the Blue. "We think our users need a nonproprietary, international standard for software. That's why Fujitsu strongly supports OSI and standards for programming languages. At present, different vendors have different options for [programming] languages. These additional specifications hinder software portability and compatibility. More standardization is needed and there's still much to be agreed upon."

Yamamoto is also a big believer in international collaboration. "Cooperation in basic technology is an essential part of our role in the worldwide dp industry," he declares. The Fujitsu chief explained the reasons the company has taken an indirect marketing approach in Europe. "When we think of opening computer stores and creating a sales force in Germany, for example, we know it would be very difficult on our own. That is one reason we have partners. Another factor is that some countries are nationalistic in their computer policies. They don't want foreign corporations to become too visible in their domestic dp industries."

The same could be said of Japan, the only market in the world that IBM does not dominate. Last year the U.S. giant was able to roll back the pcm tide in Japan, pulling ahead of both Fujitsu and Hitachi in the mainframe replacement market. In a recent interview with DATAMATION, George Conrades, managing director of IBM Asia/Pacific, offered his view of the pcm situation in Japan. "At the high end of the [computer] line, it's becoming a closer and closer race between all competitors," says Conrades. "What I think the pcms missed was that software, not the microchip, is the differentiator. In one way you can say they're in the wrong business. That's the reason so many new entrants to the market are in the software business."

So is IBM, which is adamant about protecting its software investments, especially in Asian countries that are notorious for violating copyright and patent laws. "The idea that anyone should give a concession to anyone else on intellectual property is fuzzy thinking," Conrades insists. "In the information industry, better mousetraps are delivered through better software functions. You have to have laws to protect the investor and the innovator so they can both enjoy a fair return to reinvest."

IBM denies it uses intellectual property laws to restrict user or vendor access to its software. "We'll license to anybody," claims Conrades, who went on to explain that "what we are trying to do is protect our investment from those who have not made a similar investment . . . If [pcmers] thought they could avoid this investment by doing their R&D in other ways, that was a bad business strategy. We are going to stand very strongly behind the protection of our intellectual property and so should the industry."

Japanese subsidiary had a banner year in 1985.

Also on the telecom front last year, NTT signed a technology transfer agreement with AT&T. By helping to ease trade tensions, it gave a major contract for core network switching equipment to Northern Telecom. During the spring of 1985, extensive negotiations over foreign telecom participation resulted in an overhaul of Japan's Byzantine system of technical standards—standards that had been tying up outside communications vendors for years.

Politicians in Washington, D.C., unsure that such streamlining schemes would do the trick, turned up the heat by urging Japan to open up its telecom market to foreign competition. Several bills calling for reciprocity of market access were offered. One Japanese response was to cut import tariffs from 4% to 6% on cpus and

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Some of the major team-ups in Japan last year came on the telecom side.

peripherals, effective April 1986. This marked the removal of the last formal Japanese import restrictions on dp wares. The subsequent surge of the yen against the dollar, however, rendered this token effort virtually meaningless.

The mighty MITI continued to play a prominent role in orchestrating the development of the Japanese dp industry last year. Stealing some of MITI's thunder were vocal bureaucrats at the rival Ministry of Posts & Telecommunications (MPT). The two agencies rallied around OSI standards and the MPT proposed the formation of a high-level Telecommunications Technology Committee in response to U.S. open market demands.

Also on the standards scene, MITI kicked off a five-year project to develop Software Industrialized Generator and Maintenance Aids (SIGMA). Designed to cut down the applications software backlog in Japan, the five-year, $200 million SIGMA project calls for developing a standardized set of Japanese Unix tools for software production. Both DEC and AT&T have assumed leadership roles in SIGMA.

Meanwhile, MITI's role has changed dramatically from the days when Japan's dp industry was in its infancy. Now that the industry can stand on its own two feet, MITI officials function more as tour guides, promoters, and coordinators of projects aimed at enhancing the competitive status of the Japanese computer industry.

IBM's inroads on Japanese turf are helping to keep that competitive edge sharp. The rules of that game can no longer be dictated by any one player. To score strategic points in the year ahead, the Japanese dp masters will be looking for new patterns of play to help them battle Big Blue.

METHODOLOGY

The 1985 Japan top 10 survey was compiled exclusively by DATAMATION from information culled from our in-house database, which tracks the dp results of over 200 companies worldwide. The fiscal year of most Japanese companies ends March 31 and consolidated results are usually not announced until three to four months later. Therefore, DATAMATION has revised some of the figures in its database to reflect this more recent information. All revenue and earnings figures have also been adjusted to calendar year calculations and converted to U.S. dollars, using OECD exchange rates for the appropriate period.

For the purposes of the survey, data processing-related revenue is defined as general purpose dp products and services generated by one or more of the following categories: mainframes, minicomputers, office systems, data communications, peripherals and terminals, software and services, and maintenance and repair.

Excluded are data transmission or "basic" services revenues from specialized common carriers, standalone electronic and mag card typewriters and standalone electronic cash registers, instrumentation, semiconductors, printed circuit boards, automated test equipment, and dp supplies, with the exception of magnetic media for disk and tape drives. All peripherals that attach to a system are included. For computer-based manufacturing systems, such as computer-controlled machine tools, only computer and hardcopy output devices are included and not the tools themselves. ◉

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